

WHAT IS CLAIMED IS:

1. A method of optimizing a computer program,
comprising:

generating annotation information about said
computer program;

5 storing said annotation information with said
computer program; and

dynamically optimizing said computer program
based on said annotation information while said
computer program is being executed.

2. The method of claim 1, wherein said dynamically
optimizing said computer program comprises replacing
subroutine calls in said computer program with inline
program code.

3. A method of enabling dynamic optimization of a
computer program, comprising:

generating annotation information about said
computer program; and

5 storing said annotation information with said
computer program, said annotation information
enabling a dynamic optimizer to optimize said
computer program during execution.

4. The method of claim 3, wherein generating annotation
information comprises generating annotation information
enabling replacement of subroutine calls with inline
program code in said computer program while said computer
5 program is being executed.

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13. The method of claim 11, wherein said non-ambiguous memory locations comprise stack frame locations.

14. The method of claim 3, wherein said generating annotation information comprises generating annotation information comprising a mapping of memory references to all non-ambiguous locations which are referenced.

15. The method of claim 3, wherein said generating annotation information comprises generating annotation information comprising a list of canonical names of stack frame locations that are promotable.

16. The method of claim 3, wherein said generating annotation information comprises generating annotation information comprising a guarantee that no stack frame location is live beyond the scope of the stack frame.

17. The method of claim 3, wherein said generating annotation information comprises generating annotation information comprising a format and a location of stack unwinding information.

18. A method of dynamically optimizing a computer program, comprising:

reading annotation information stored with said computer program; and

dynamically optimizing said computer program based on said annotation information while said computer program is being executed.

19. The method of claim 18, wherein said dynamically optimizing said computer program comprises a binary translator optimizing said computer program.

20. The method of claim 18, wherein said dynamically optimizing said computer program comprises replacing subroutine calls in said computer program with inline program code.

21. The method of claim 18, wherein said dynamically optimizing said computer program comprises removing redundant callee-save register restores.

22. The method of claim 18, wherein said dynamically optimizing said computer program comprises propagating constant arguments within said computer program.

23. The method of claim 18, wherein said dynamically optimizing said computer program comprises promoting local data from a stack frame location to a register.

24. The method of claim 18, wherein said dynamically optimizing said computer program comprises removing redundant callee register saves.

25. The method of claim 18, wherein said dynamically optimizing said computer program comprises removing stack frame allocation.

26. Apparatus for enabling dynamic optimization of a computer program, the apparatus comprising:

one or more computer readable storage media;
and

5 computer executable instructions stored in the one or more computer readable storage media, the computer executable instructions comprising:

instructions for generating annotation
information about said computer program,
10 wherein said annotation information enables a dynamic optimizer to optimize said computer program during execution; and

instructions for storing said annotation information with said computer program.

27. Apparatus for dynamically optimizing a computer program, the apparatus comprising:

one or more computer readable storage media;
and

5 computer executable instructions stored in the one or more computer readable storage media, the computer executable instructions comprising:

instructions for reading annotation
information stored with said computer program;
10 and

instructions for dynamically optimizing said computer program based on said annotation information while said computer program is being executed.